

1. A nanocomposite comprises:
 - a. an aluminum alloy phase;
 - b. a nano-scale aluminum oxide phase; and
 - c. a modulus phase.
2. Said nanocomposite in accordance of Claim 1, wherein said aluminum alloy comprises elements taken from aluminum, boron, cobalt, copper, iron, magnesium, manganese, nickel, silicon, titanium, zinc, alloys and combination thereof.
3. Said nanocomposite in accordance of Claim 1, wherein said nano-scale aluminum oxide phase is nano-scale aluminum oxide particles being uniformly distributed in said nanocomposite.
4. Said nanocomposite in accordance of Claim 1, wherein said modulus phase is ceramic particles being uniformly distributed in said nanocomposite.
5. Said modulus ceramic particles in accordance of Claim 4 are selected from boron carbide powder, silicon carbide powder or other ceramic powders having higher elastic modulus than that of aluminum oxide.
6. Said nanocomposite in accordance of Claim 1 comprises about 0.5 to about 10 volume percentage of said nano aluminum oxide particles.
7. Said nanocomposite in accordance of Claim 1 comprises about 1 to about 45 volume percentage of said modulus ceramic particles.

8. Said nano-scale aluminum oxide particles in accordance of Claim 3 have an average particle size between about 10 nm to about 800 nm.

9. Said modulus ceramic particles in accordance of Claim 4 have an average particle size between about 0.2 microns to about 15 microns.